REMARKS

By the above actions, claim 17 has been amended and claims 27 and 28 have been cancelled. Accordingly, claims 17-26, 29 and 30 remain pending, claims 1-16 having been previously canceled. In view of the actions taken and the following remarks, further consideration of this application is now requested.

With regard to the rejection of:

> Claims 17-19, 21, 22, 24, 26 and 30, under 35 U.S.C. § 103(a), as being obvious in view of combination of teachings of Doyle ('088) and Reich ('589),
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> Claims 23, 25, 27 and 28, under 35 U.S.C. § 103(a), as being obvious in view of the combination of teachings of Doyle ('088), Reich ('589) and Lanni et al. ('881),
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> Claim 20, under 35 U.S.C. § 103(a), as being obvious in view of the combination of teachings of Doyle ('088), Reich ('589) and Allingham ('377), and
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> Claim 29, under 35 U.S.C. § 103(a), as being obvious in view of the combination of teachings of Doyle ('088), Reich ('589) and Pinkel et al. ('534).

each of these rejections is respectfully traversed.

The present invention as defined in amended claim 17 relates to a microscope which can be used both for epi-fluorescence and for transmitted light illumination, wherein the illumination light has different wavelengths in the epi-fluorescence illumination mode and in the transmitted light illumination mode. That is, the change between the epi-fluorescence illumination mode and the transmitted light illumination mode is affected by a change of the wavelength of the light emitted by the light source. In the transmitted light illumination mode the illumination light passing through the objective lens passes through the specimen, is reflected by the reflector means, and passes again through the specimen and through the objective lens. In the epi-fluorescence illumination mode the excitation light passing through the objective lens is focused on the specimen where a portion of the excitation light is absorbed for exciting fluorescence, while the non-absorbed portion of the excitation light is

reflected at the reflector means and passes again through the specimen where a portion of the reflected excitation light is absorbed for exciting the florescence.

According to the embodiment in the amended claim 17, a dichroic beam splitter is used which is essentially impermeable with respect to the fluorescence excitation light (i.e., the illumination light in the epi-fluorescence illumination mode) and is essentially permeable with respect to the fluorescent light emitted by the specimen illuminated with the fluorescence excitation light. Consequently, the fluorescence light can be separated from the excitation light. Further, claim 17 sets forth that the beam splitter is essentially permeable with respect to the illumination light used in the transmitted light illumination mode.

However, even if the beam splitter is essentially permeable with respect to the light used in the transmitted light illumination mode, due to the high intensity usually available in the transmitted light illumination mode, enough illumination light will be reflected by the beams splitter so that sufficiently bright trans-illumination can be accomplished, as discussed at paragraph [0013] of the description. Therefore, with the current invention the same beam splitter can be used both in the epi-fluorescence illumination mode and in the transmitted light illumination mode so that a fast change between these two modes can be accomplished by simply changing the wavelength of the light emitted by the light source, i.e., from epi-fluorescence excitation light to trans-illumination light and vice versa.

In contrast to the claimed invention, Doyle and Reich neither disclose nor suggest a particular microscope having an epi-fluorescence illumination mode and a transmitted light-illumination mode. In particular, Doyle discloses a microscope having a transmitted light illumination mode only (see abstract). Further, Doyle fails to disclose that the wavelength of the illumination light emitted by the light source may be variable. Doyle (see column 4, line 11+) discloses the use of a semi-transparent beam splitter, which teaches away from using a dichroic beam splitter according to the present invention.

A review of the Reich patent, cited by the Examiner to allegedly show apparatus for alternately producing transmitted light and epi-fluourecence illumination, reveals a microscope having a conventional fluorescence trans-illumination mode only, wherein the specimen is illuminated with fluorescence excitation light from that side of the specimen opposite to the objective lens and collecting the fluorescence light emitted by the specimen (see Figures 1 and 5), there is no disclosure of an alternating illumination mode as asserted by the Examiner. In contrast, according to the presently claimed invention, the microscope of claim 17 has an epi-fluorescence illumination mode wherein the epi-fluorescence light is focused by the objective lens on the specimen, with a reflector being provided at the opposite side of the specimen for reflecting epi-fluorescence light excitation light not having been absorbed in the first pass a second time onto the specimen. Further, Reich fails to teach or suggest that the variability of the light emitted by the light source may be used for changing between a fluorescence mode and a transmitted light illumination mode. It is further noted that Reich, due to the trans-fluorescence illumination employed there, also fails to teach to using a dichroic beam splitter.

To address the failure of Doyle and Reich to teach or suggest using a dichroic beam splitter as presently claimed, the Examiner turns to the teachings of Lanni et al. However, a review of Lanni et al. reveals that the patentees do not teach a dichroic beam splitter as presently claimed. Specifically, claim 17 requires a dichroic beam splitter which "is essentially impermeable with respect to said excitation light and is essentially permeable with respect to fluorescent light and light for said transmitted light illumination." However, Lanni et al teaches a dichroic beam splitter 26 that does not function as presently claimed. That is, Lanni et al states that the green light (incoherent - fluorescent/transmitted light) is reflected by dichroic beam splitter 26 and that excitation light 29 passes through the dichroic beam splitter 26 (see column 8, lines 47-65). In Lanni et al the dichroic beam splitter 26 performs the opposite function from the dichroic beam splitter presently claimed by reflecting (i.e., impermeable) the green light and transmitting (i.e., permeable) the red excitation light.

Therefore, even if the teachings of Lanni et al are combined with the teachings of Doyle and Reich all the features of the presently claimed invention are not taught or suggested by the combination.

In summary, the Doyle patent discloses a microscope which is adapted for transmitted light illumination and reflected light illumination only of a specimen, and, in contrast to the present invention, the microscope accessory in Doyle also is not capable of operation for epi-fluorescence illumination. That is, the Doyle microscope accessory does not have a light source which is adapted to allow a change between different wavelengths for producing, alternately, transmitted light illumination mode and epi-fluorescence illumination mode, which latter mode is taught by Reich. However, Reich provides no motivation to add the fluorescence-only mode to the transmitted light illumination-only mode of Doyle. Further, the Lanni et al reference does not teach or suggest a dichroic beam splitter capable of operation as presently claimed.

Accordingly, since the instant claim 17 provides that the "light source is adapted to allow a change between different wavelengths for producing, alternately, transmitted light illumination and epi-fluorescence illumination" and that the dichroic beam splitter "is essentially impermeable with respect to said excitation light and is essentially permeable with respect to fluorescent light and light for said transmitted light illumination" Doyle, alone or in combination with Reich and Lanni et al, cannot render obvious the subject matter of claim 17 and those claims which depend from claim 17.

Finally, a review of the Allingham and Pinkel et al. references reveals that neither patent provides a teaching or suggestion which remedies the deficiencies of Doyle, Reich or Lanni et al. discussed above. Accordingly, the rejections of the claims 17-26, 29 and 30, under 35 U.S.C. 103(a), based upon the Doyle, Reich and Lanni et al. references are improper and must now be withdrawn.

While the present application is now believed to be in condition for allowance, should the Examiner find some issue to remain unresolved, or should any new issues

arise, which could be eliminated through discussions with Applicant's representative, then the Examiner is invited to contact the undersigned by telephone in order that the further prosecution of this application can thereby be expedited.

Respectfully submitted,

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